

Application/Control Number: 09/658,370

Page 2

Art Unit: \*\*\*

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Art Unit: \*\*\*

1. (currently amended) A computer-implemented method for automated management of a plurality of railroad transportation system and business entity assets by a transportation business entity, the plurality of railroad transportation system and business entity assets comprising a train including at least one locomotive and at least one piece of rolling stock, at least one railroad support vehicle, at least one piece of railroad support equipment, and at least one business entity facility, said method comprising the steps of:

collecting ~~at least one~~ a first set of transportation data from at least one subsystem associated with a railroad transportation system ~~assets and system asset~~ and collecting ~~at least one~~ a second set of transportation data from at least one subsystem associated with a business entity asset;

transmitting the ~~set~~ first and second sets of transportation data to a central data center via a communication link;

comparing the ~~set~~ first and second sets of collected transportation data set to a standard transportation data set;

generating at least one problem area data set based upon the comparison of the collected and standard data, the problem area data set including a transportation business entity schedule impact, and a transportation business entity asset requirement;

prioritizing each generated problem area data set relative to each other generated problem area data set;

recommending business activities relating to managing the plurality of railroad transportation system assets and business entity assets of the transportation business entity based on the priority of the problem area data sets such that a total transportation business entity delay time is ~~facilitated-being~~ minimized wherein recommending business activities relating to managing the transportation business entity includes at least one of altering an asset allocation priority, generating a maintenance action based on an actual or an anticipated failure due to recent transportation system activity, and altering a state of a transportation system

Art Unit: \*\*\*

environmental system to protect a cargo, and wherein ~~based on a component~~ based on a component failure analysis, recommending business activities relating to managing the transportation business entity also includes at least one of determining a location of emergency equipment, recommending a location for a repair facility, determining an emergency equipment inventory, and determining an inventory for each repair facility; and

transmitting the recommendations to the plurality of railroad transportation system assets from a central data center to facilitate implementing the recommendations.

2. (currently amended) A method in accordance with Claim 1 wherein ~~collecting-at-least-one the first set and the second set~~ of transportation data from a plurality of sub-systems comprises collecting at least one set of transportation data from a plurality of sub-systems wherein the plurality of subsystems includes at least one of a wayside sub-system, a locomotive sub-system, a railcar sub-system, a yard sub-system, a schedule sub-system, a monitoring and diagnostic sub-system and a management making sub-system.

3. (currently amended) A method in accordance with Claim 1 wherein ~~collecting-at-least-one the first set and the second set~~ of transportation data from a plurality of sub-systems comprises the step of collecting real-time data from at least one sub-system.

4. (currently amended) A method in accordance with Claim 3 wherein the transportation system includes at least one vehicle, and said method further comprising the step of altering a performance of the vehicle based upon the problem area data set.

5. (original) A method in accordance with Claim 4 wherein said step of altering the performance of the vehicle based upon the problem area data set comprises the step of continuously altering the performance of the vehicle based upon the real-time data.

6. (original) A method in accordance with Claim 1 further comprising the step of identifying at least one source of delay.

7. (original) A method in accordance with Claim 6 wherein said step of identifying at least one source of delay comprises the step of identifying a defined quantity of largest source of delays.

Art Unit: \*\*\*

8. (currently amended) A method in accordance with Claim 7 wherein said step of identifying a defined quantity of largest source of delays comprises the step of ~~a user~~ selecting a number of largest source of delays based on a user input.

9. (previously presented) A method in accordance with Claim 1 further comprising the steps of determining a predicted transportation system delay based upon the problem area data.

10. A method in accordance with Claim 1 wherein said step of collecting at least one set of transportation data from at least one sub-system comprises the step of transmitting data between at least one sub-system and a data center utilizing at least one communication link.

11. (currently amended) An automated management system for managing a plurality of transportation system assets by a transportation business entity, said system comprising:

at least one sub-system for collecting at least one set of transportation data from respective ones of said plurality of transportation system assets;

a sub-system for analyzing the at least one set of collected transportation data set for at least one of failure modes and effects, anticipated failure probabilities, and failure corrective actions;

a sub-system for comparing the at least one set of collected transportation data set to at least one standard transportation data;

a sub-system for generating at least one problem area data set based upon the comparison of the collected and standard data, the problem area data set including a transportation business entity schedule impact, and a transportation business entity asset requirement; and

a management and decision making sub-system that is configured to:

recommend business activities relating to managing the transportation business entity based on at least one of the generated problem area data set and the comparison of the collected and standard data wherein the business activities relating to managing the transportation business entity are based on the priority of the problem area data sets such that a

Art Unit: \*\*\*

total transportation business entity delay time is ~~facilitated being~~ minimized, and wherein the business activities relating to managing the transportation business entity includes at least one of altering an asset allocation priority, generating a maintenance action based on an actual or an anticipated failure due to recent transportation system activity, altering a state of a transportation system environmental system to protect a cargo, and wherein ~~based on component-based on a component~~ failure analysis, the business activities relating to managing the transportation business entity also includes determining a location of emergency equipment, recommending a location for a repair facility, determining an emergency equipment inventory, and determining an inventory for each repair facility, and

transmit the recommendations to the plurality of railroad transportation system assets from a central data center to facilitate implementing the recommendations.

12. (original) A management system in accordance with Claim 11 wherein said at least one sub-system includes at least one of a wayside sub-system, a locomotive sub-system, a railcar sub-system, a yard sub-system, a schedule sub-system, a monitoring and diagnostic sub-system and a management or decision making sub-system.

13. (original) A management system in accordance with Claim 11 wherein said at least one sub-system for collecting at least one set of transportation data is configured to collect real-time data from said at least one sub-system.

14. (original) A management system in accordance with Claim 13, wherein the transportation system includes at least one vehicle, said management system configured to alter a performance of at least one vehicle based upon the problem area data set.

15. (original) A management system in accordance with Claim 14 wherein at least one sub-system is configured of continuously altering the performance of the vehicle based upon the real-time data.

16. (original) A management system in accordance with Claim 11 wherein said at least one sub-system is configured to identify at least one source of delay.

Art Unit: \*\*\*

17. (original) A management system in accordance with Claim 16 wherein said at least one sub-system is further configured to identify a pre-defined quantity of largest source of delays.

18. (currently amended) A computer-implemented system comprising a plurality of railroad transportation system and business entity asset sub-systems and a transportation business entity central data center, said computer configured to:

collect at least one set of transportation data from a plurality of subsystems associated with said plurality of railroad transportation system and business entity assets;

automatically modify a performance of controlled assets such that total transportation system delays are minimized;

compare said collected transportation data set to at least one standard transportation data;

generate at least one problem area data set based upon the comparison of the collected and standard data;

prioritize top transportation system problem areas wherein said priority is based upon a total transportation business entity delay time facilitated being minimized;

recommend business activities relating to managing the transportation business entity based on the prioritized transportation system problem areas wherein recommending business activities relating to managing the transportation business entity includes at least one of altering an asset allocation priority, generating a maintenance action, altering a state of a transportation system environmental system, determining at least one location to place emergency equipment, recommending at least one repair facility location, determining an emergency equipment component inventory, and determining a repair facility component inventory; and

19. A system in accordance with Claim 18 comprising at least one locomotive sub-system attached to a locomotive, each said locomotive sub-system

including a GPS receiver and a transceiver, said locomotive sub-system configured to determine a real-time absolute geographic position of the locomotive.

Art Unit: \*\*\*

20. (previously presented) A system in accordance with Claim 18 further configured to determine a predicted delay based upon said problem area data.

21. (previously presented) A method in accordance with Claim 1 wherein generating at least one problem area data set based upon the comparison of the collected and standard data comprises identifying delays for each of at least one of a selected type of delay or failure.

22. (previously presented) A method in accordance with Claim 21 wherein said selected type of delay comprises at least one of maintenance delays and broken track delays.

23. (previously presented) A method in accordance with Claim 21 wherein recommending business activities comprises sorting the identified delays based upon a magnitude of the delay.

24. (previously presented) A method in accordance with Claim 1 wherein recommending business activities relating to managing the transportation business entity comprises at least one of predicting a life of a railcar and predicting a maintenance cost of the railcar over the life of the railcar.

25. (previously presented) A method in accordance with Claim 1 wherein generating at least one problem area data set based upon the comparison of the collected and standard data comprises determining shipment damage locations.

26. (previously presented) A method in accordance with Claim 1 wherein recommending business activities relating to managing the transportation business entity comprises determining at least one of an insurance claim type, a quantity of insurance claims, and a risk profile of at least one of a transportation carrier, railcar car, and a route.

Art Unit: \*\*\*

27. (previously presented) A method in accordance with Claim 1 wherein recommending business activities relating to managing the transportation business entity comprises providing real-time transportation entity management with real-time transportation system-wide problem area data sets.

28. (previously presented) A system in accordance with Claim 11 comprising a management and decision making sub-system configured to provide transportation entity management with real-time transportation system-wide problem area data sets.

29. (previously presented) A system in accordance with Claim 20 wherein said predicted delay is generated from at least one of a transportation system component failure rate, a time required to complete a component maintenance action, and anticipated failure delay.

30. (previously presented) A management system in accordance with Claim 11 wherein said management and decision making sub-system is further configured to alter the status of a non-locomotive component in response to the generated problem area data set, wherein said non-locomotive component includes at least one of a repair vehicle, a maintenance work order, and a track capacity.